

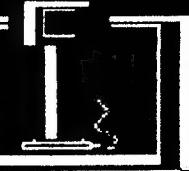
# Mid-State Amateur Radio Club



President: Bob Cannack N9IMP  
V. Pres: Randy Shabe KC9LC  
Secretary: Bill Brinkman EA9ZM  
Treasurer: Mac McCarty NV9K



WB9YIG/R  
146.835



## The Spark Gap

December 1992

### UPGRADES AT RUSHVILLE TEST SITE

Tom Daugherty N9QVN	Franklin	Advanced
Tracy Denny N9OLM	Clermont	Advanced
Arthur Kozik N6ERT	Connersville	General
Eric Morrell KB9IBN	Rushville	Tech
Ken Watkins KB9HXB	Greenfld.	General

\* \* \* \* \*

### 1993 VE TESTING SCHEDULE

Next year testing will be offered the third saturday of each month from March through November. All tests will be held in Franklin. If Rushville needs to have a special test session during the year it will be announced in this newsletter.

\* \* \* \* \*

### PLANNING TO UPGRADE?

If you are planning to upgrade in the near future, there are some sample tests available for you to practice with. These are tests that the team has been using during the 1992 test year. The team is changing to the ARRL printed tests for the next year. These old tests are current, using the same question pool that is used on the 1993 tests. Using these tests might help you to be sure you are ready. If interested, get in touch with Mac, NV9K.

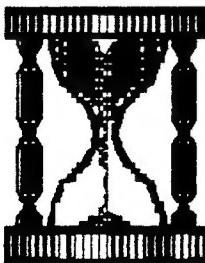
### VE TEAM STATISTICS

Our local club-supported VE testing team has been active for a little more than two years. In that period of time a total of 399 hams have been tested, with 288 making successful upgrades. This represents a 72 percent success ratio. From this group, 91 applicants attempted the no-code Tech exam. Records show that 66 received this license. Of the 25 who failed, most did not pass element 3A. This group also enjoyed a 72 percent success ratio.

The no-code Tech process has produced a lot of criticism, but the actual statistics show that a large percentage of NC Tech hams DO upgrade to higher licenses! In our test group, 15 of the 66 earned a higher license at our own test sessions! Possibly some of the others may have upgraded with other test teams. It seems that the NC Tech process is helping to bring many technical people into our ranks. The very future of ham radio depends on this!



### PACKET RADIO



TIME IS RUNNING OUT!

1993 DUES CAN BE  
PAID NOW!

There has been a rebirth of interest in packet radio among our club members lately. With the installation of packet in the EOC which offers a host of informative bulletins, club news, RACES information, and a BBS, we are progressing!

12/92

## **ARE YOU READY FOR AN EMERGENCY?**

How many times have you pulled up on an automobile accident moments after it happened and discovered you were confused about what to do, how to help. Who do you call for help? What agency? How can you give first aid?

As amateur radio operators we may be faced with an emergency situation. Using our communications equipment to call for help could mean the difference between life and death for an accident victim. Who to call and what information to report are important when it comes to summoning a quick response from life saving personnel.

At the December club meeting Jabran Soubeih, N9KZA, will give us a short course on how to properly report an emergency situation in our community. As a trained volunteer fire fighter for Greenwood, Jabran has spent many hours learning fire fighting techniques and first aid. He will pass along some of that knowledge so we all can become more effective in reporting and responding to an emergency situation.

## **PLANS FOR 1993**

As I begin to fill out the meeting calendar for 1993 I am pleased to announce that WISH TV meteorologist Ben Woods will be our guest for the February meeting. Of course he will be getting us primed and ready for the spring tornado season.

I have several special speakers in mind. All of them should prove to be very interesting. I'm also open for other ideas. Let me know if you have someone who would be willing to address our club during the coming months.

One of the great things about ham radio is the diversity of technology. Let me know what you would be interested in

bearing about. I welcome your input. Call me at home or on the radio. Operators are on duty to take your call (or at least the answering machine). Let's make the Midstate Amateur Radio Club meetings in '93 something to talk about! Tnx, Jack NT9J,

## **GROUNDING SECURITY**

There are several reasons to have a properly grounded antenna system. A poorly grounded antenna acts as a gathering point for static electricity, can not bleed off to ground, building up a charge. When you disconnect your coax cable, you are subject to a good jolt, but the main problem is that your antenna may be the discharge path for lightning. A simple grounding system could have prevented this situation.

How to ground; Drive an 8 to 12 feet grounding rod into the ground and attach a number 4 copper wire to the rod. Do not use a clamp, which may corrode, to connect ground wire. Solder the wires to the ground rod. Run the number 4, or greater, copper wire to a ground buss, (a copper bar with brass bolts) to attach individual ground wires. Ground each individual piece of equipment, (do not serial ground) to the ground buss. Ground the base of your antenna. Do not use your tower as a ground. Ground each antenna and each section of your tower. This not only decreases the noise in your radio, but insures that RF and static electricity bleeds to the ground. Some will tell you all this is not required, but how secure do you want to be?

Many new hams in a hurry to GET ON THE AIR overlook the need to have effective grounding! If you want your newly acquired equipment to survive the problems of lightning and static electricity you should be concerned with a good ground.

# PACKET PRIMER By Jeff Sloman N1EWO

## Discovering Packet Radio

Johnson County has seen an explosion of packet radio operations in the past few weeks, as people show a new--or renewed--interest in this high-tech operating mode. Spend some time listening to the MARC repeater, and you'll hear comments like, "I always wanted to get into packet, but the whole thing is a mystery to me", and "I'd like to set up a packet station, but I don't know if I can use my PC for it."

This confusion is understandable--the software, hardware, and techniques of packet radio are not exactly "user-friendly," I want to try to de-mystify packet operations for you. In this column you will find new and interesting information whether you are just starting, haven't started yet, or have been at it for years. Packet radio encompasses radio technology, computer technology, and operating practices--and understanding each is necessary to be a good operator.

### What is Packet Radio?

The name "Packet Radio" is a generic one, meaning terminal to terminal radio-based communication of data using a particular type of error correcting protocol. Informative, eh? Well, maybe not. Let's take a look at what most people mean when they talk about packet. In common usage, packet radio is a way of talking via computer or dumb terminal--to another computer or dumb terminal. Either side of the conversation can be a human or a computer program. The term "packet" comes from the error detection and correction method used to insure error

free data transmission. A simple-minded version goes something like this: NV9K is in QSO with WB5VZT. Mac types a line of text and hits enter. His TNC (Terminal Node Controller, see below) performs a mathematical operation on the text called a CRC (Cyclic Redundancy Check), which returns a particular number. The TNC then takes the text, the CRC result, and addressing information (who it came from and where it is going) and assembles (technical term) a data "packet." This packet is then broadcast via Mac's radio. If all is well, Bob's radio hears the broadcast, and, recognizing its call in the packet's "header", his TNC starts the reverse process of disassembly (assembly's counterpart.) Bob's TNC looks at the text from Mac which is inside the packet and performs the same CRC. If the result matches the CRC sent by Mac, all is fine and it is displayed on Bob's computer screen. This is the error detection part. If the CRC results do not match, Bob's TNC sends a "retry request" to Mac's TNC. This causes Mac's TNC to re-send the packet. This is the error correction part of packet radio. We can go on like this forever, but most TNCs are set to give up after 10 unsuccessful attempts. This whole scheme, along with a description of exactly how the bits should look is called AX.25 (Amateur X.25). X.25 protocol is used for land line networking, AX.25 adds some special features for radio use,

### Parts of a Packet Station

I really want to get more deeply in AX.25 and how it works, but considering this is the first column--and many of you are foaming at the mouth (fingers?) just waiting to get on the air, I think it would be a good idea to review just what you'll need.

There are three parts to a packet station, though the physical dividing lines can get fuzzy:

1. A radio system
2. A TNC (Terminal Control Unit)
3. A terminal.

Starting from the top, you might ask why I called it a "radio system." Well, since you asked, I'll tell you. Packet radio operation uses a technique called CSMA/CD (Carrier Sense Multiple Access/Collision Detection). This is a fancy name for what you do on the repeater every day. Carrier Sense means listen before you talk. Is someone keyed up? Then don't talk. Multiple Access means that, unlike a telephone conversation, more than two stations can share the same channel. Collision Detection means "Hey you guys doubled, try it again." You can see CSMA/CD is common sense, but computers don't have common sense--they don't have any sense--you have to tell them exactly what to do.

OK, I get the CSMA/CD stuff, what does this have to do with "radio systems?" I'm getting to that. A packet radio LAN's (Local Area Network) success at serving more than two stations at a time depends entirely upon making CSMA/CD work, and to do that every station on the LAN must be able to hear every other station on the LAN. If you have ever been in a simplex QSO with two other stations who couldn't hear each other, you know this from personal experience.

So your radio system--radio and antenna--must have the omnidirectional coverage to be heard by and hear every other station in the LAN's service area. This is why 149.30 is so nice to use--it is 90% Johnson County--and 145.03 makes you want to take up needle point and burn your radios. I think there may be

stations on Pluto trying to use that LAN, A beam may work in some circumstances--for example NT9J uses one for the 145.03 LAN--but only if there is nobody behind nulled out by the beam. The best bet is a good omni antenna up as high as you can get it, and some decent power.

Number two on the list is the TNC. Simple-mindedly, a TNC is (usually) a small box with PAD (Packet Assembler/Disassembler) and modem in it. The PAD does the AX.25 stuff we talked about above, and the modem turns the digital signals into sounds which allow your radio to send them. Digital signals are basically DC (Direct Current) and you can't send that over the radio. The question of which TNC is a pretty big one.

There are plenty of them out there, and I've rarely heard of someone saying that they didn't like what they got. Here are some rules of thumb for choosing a TNC:

Just getting started, 2 meters only. Borrow one from a friend, buy something at a hamfest, or if you must buy new, buy cheap. I would strongly recommend the borrowing route to get started. You are very likely to find someone you know who has gone onto a bigger and better unit. This will get you started and oriented. Start simple, don't burn yourself out with confusion. If you decide to buy after that, you'll know a lot more.

HF fanatic, want to do both? (HF and VHF) If you can borrow something, great. In any case look at the AEA units, they are noticeably better on HF than the competition.

Just gotta have the latest and greatest? Look at DSP-based units like the AEA-1232 or L.L. Grace DSP-12. These units use DSP (Digital Signal Processing) technology to do some amazing things. This is the up-and coming technology that you will soon

see in every thing from telephones to toasters, OK, maybe not toasters.

The last item on the list is a terminal (no pun intended). A terminal for packet radio can be as simple as a dumb terminal--which you can often find free--or as complicated as a 486/33 computer! Using a computer as a terminal has some advantages, like being able to upload (send) and download (receive and store) information to and from packet BBSs. Any computer with a working serial port can be used for packet. You just need a terminal program of some kind that will run on your machine. How do you know it will work? If it works with a modem, it will work with a TNC. If you have a computer but no software, just ask around--there are public domain (free) terminal programs for just about every computer that still boots (and quite a few that don't).

Conclusion: Getting started in packet may seem difficult, but there are plenty of club members who are very happy to help. Give it a try, and if you need help you can always call me on the repeater, I'm happy to help. 73 de N1EWO

(c)1992 Jeffrey Sloman. Written for the MARC Sparkgap. May be reprinted in any free publication, or via amateur radio, if this copyright message is attached. All other rights reserved.

\* \* \* \* \*

### RACES / ARES ?

WHAT IS ARES?: Amateur Radio Emergency Service

WHAT IS RACES?: Radio Amateur Civil Emergency Service

### A R E S

ARES: The emergency division of the ARRL Field Organization. It consists of licensed amateurs who have voluntarily

registered their qualifications and equipment for communication duty in the event of a disaster. Every licensed amateur, regardless of membership in ARRL or any other local or national organization, is eligible for membership in ARES. ARES is administered by the ARRL on a local section-wide and national basis. Normally ARES runs formal and informal weather nets.

### R A C E S

RACES: Is sponsored by the federal government (FEMA-Federal Emergency Management Administration) and under the jurisdiction of the FCC Rules and Regulation Part 97 Subpart E (97.407). No station may transmit in RACES unless it is an FCC licensed primary, club, or military recreation station and is certified by a civil defense organization as registered with that organization, or is an FCC licensed RACES station. No person may be the control operator of a RACES station, or may be the control operator of an amateur station transmitting in RACES unless that person holds a current FCC issued amateur operator license and is certified by a civil defense organization as enrolled in that organization. Normal activities include tornados, floods, earthquakes, fires, civil disasters, and wars. Strict formal net rules apply. The basic difference between RACES and ARES is the word "CIVIL".

### VOICE FROM THE PAST

One of our club members returned last week from his work in California. Larry N9MKR surprised a few members when his familiar voice broke into the 835 repeater! During his brief stay in the area he managed to serve as net control on our sunday night net and to visit with many of his friends and family.

12/92

#### FAMOUS RADIO AMATEURS

Amateurs can be found in all walks of life. Well known political figures, such as Barry Goldwater, K7UGA, and King Hussein of Jordan, JY1 are both amateurs. Dick Rutan, KE7LQS, had an amateur station aboard "Voyager" when he and Jeanna Yaeger made their famous flight around the world.

Country Western fans know the names of Chet Atkins, WA4C2D and singer Ronnie Milsap, WB4KCG. Other famous hams include rock guitarist Joe Walsh, Donnie Osmond used to be KA7EVD and Marlon Brando is still F00GJ (Tahiti). Some of our members will remember entertainers Andy Devine and Arthur Godfrey, K4LIB, as well as musicians Pee Wee Hunt and Alvino Rey, W6UK. Thanks to WB9AYB for this info.



#### NEW MEMBER

Our newest club member is Steve Meadows, N9MUQ. Steve and his wife Helen live in Greenwood. Steve is Project Leader at Naval Air Warfare Center in Indianapolis. He lists his interests as woodworking, photography, and fishing. Welcome to the club, Steve. We hope you can take an active part in club activities!

